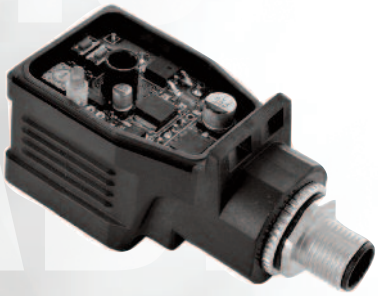
CONTINENTAL HYDRAULICS

MOTION CONTROL SOLUTIONS

CEM MODULES | SOFTWARE | TOOLS | ACCESSORIES

MOTION CONTROL SOLUTIONS



BRAINS OF **ELECTRONICS** CONTROLLING
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MOTION CONTROL SOLUTIONS

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SINGLE CHANNEL POWER AMPLIFIER
CEM-AC

DIN Coil Mount

DESCRIPTION

This power amplifer mounts directly to a single solenoid proportional valve coil with a DIN style connector, and will drive up to 2.5A. It is suitable to control current to either a proportional flow or pressure valve coil.

A wide range of analog signals are accepted. There are two product choices for input; one accepts voltage commands, the other accepts current commands. These inputs are easily scaled to match system requirements. Two independent ramps are available for acceleration and deceleration control.

Min and Max output current are adjustable. Output characteristics can be
independently customized. The module is disabled if the coil outputs are
shorted or open. If command current is outside of the proper range, the module is also disabled. PWM and Dither are user adjustable.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	mA	<100mA + solenoid
	External Fuse	A	3 (medium action)
ANALOG INPUTS	Voltage	vDC	0 to +10 (voltage version)
	Impedance	ohm	90k
	Current	mA	4 to 20 (current version)
	Impedance	ohm	390
	Resolution	%	<0.1
	Sample Time	mS	1.0
SOLENOID OUTPUTS		A	1.2 software selectable
		A	2.5 software selectable
	PWM Frequency	Hz	60 to 2650
	Dither Frequency	Hz	60 to 400
	Dither Amplitude	%	0 to 30
	Sample Time	mS	0.17

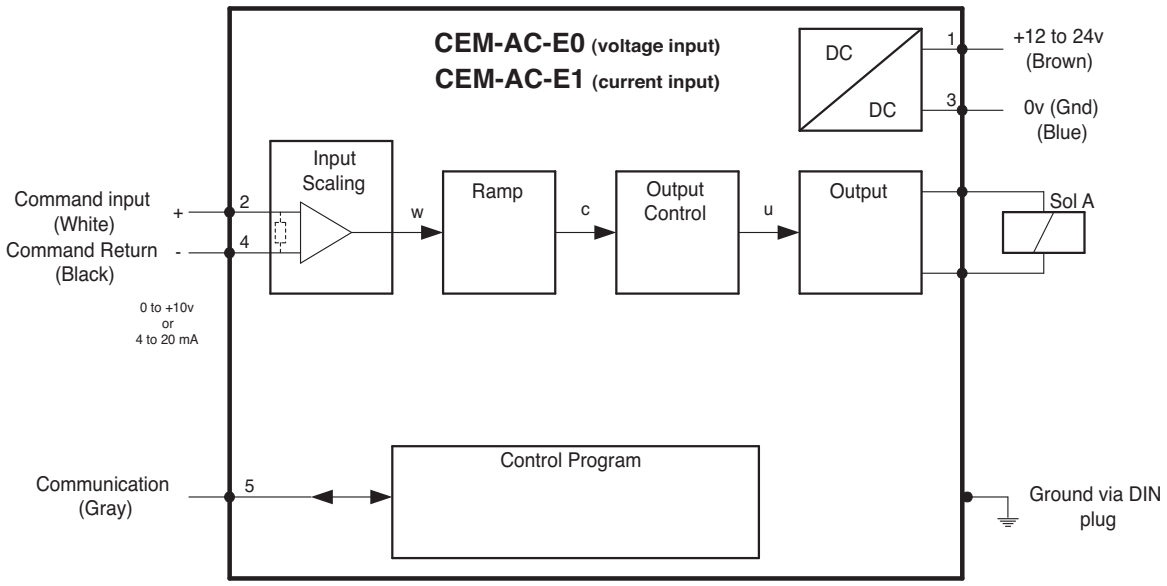
ELECTRICAL CONNECTION	Power and Signal		M12 5 pin male key style A
	Communication		LIN bus
	Ground		via DIN coil pin
HOUSING	Housing		Attaches to DIN 43650 coil
	Material		Polyamide PA
	Combustibility Class	UL94	V1
	Protection Class	IP	65 (with gasket)
	Working Temperature	°C	-20 to +60
	Storage Temperature	°C	-20 to +70
	Humidity	%	95 (non condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2
	Immunity		EN 61000-6-3
	Vibration Resistance		IEC 60068-2-6

IDENTIFICATION CODE

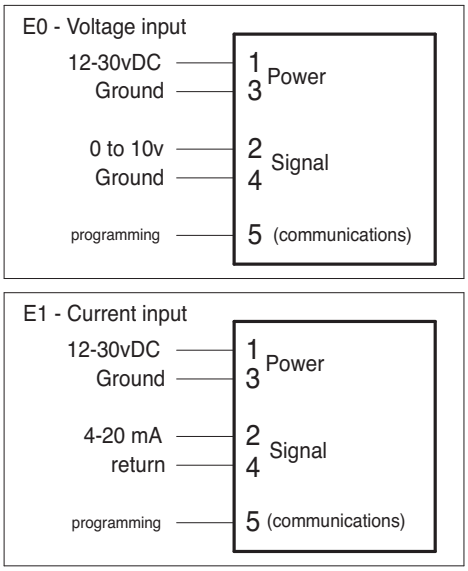
CEM - AC - E0 - A

E0	voltage input command
E1	current input command

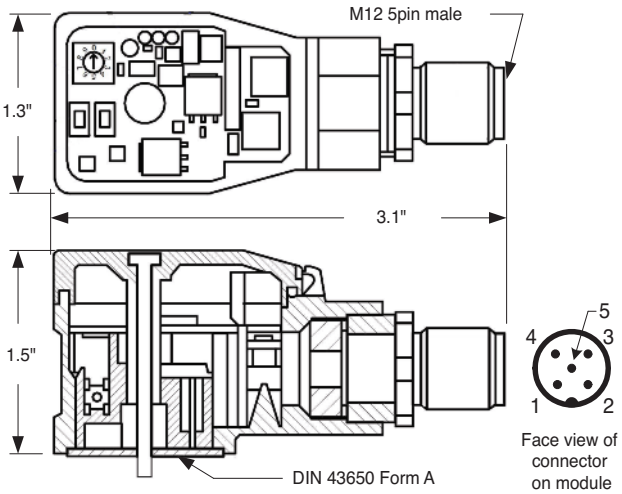
FUNCTIONAL DIAGRAM



WIRING EXAMPLE



DIMENSIONS



DUAL CHANNEL POWER AMPLIFIER
CEM-AA

DESCRIPTION

This adaptable Open loop power amplifier is configurable to drive either single or dual solenoid, or two independent proportional valve coils up to 2.6A. A wide range of analog or digital signals are accepted dependent on the configuration. User may select either voltage, current or digital input mode. These inputs are easily scaled to match system requirements.

The CEM-AA-B module has three selectable function modes:

Function mode AA for operating one single or dual solenoid Proportional Control Valve
Function mode A-B for operating independently two single solenoid Proportional Control Valves
Function mode RA, this mode accepts 3 independent switch inputs, each which has independently adjustable speed and ramp controls. Inputs are additive, for up to 8 unique preset speed and ramp profiles.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use CHI-PC software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	mA	60 (depending on type of solenoid, 2 solenoids are active)
	External Fuse	A	3 (medium action)
REFERENCE		V	8 (maximum 25 mA)
ANALOG INPUTS	Voltage	V	± 10 / 0 to 10
	Impedance	ohm	90k
	Current	mA	4 – 20
	Impedance	ohm	390
	Resolution	%	<0.01
	Sample Time (process)	mS	1.0
	Sample Time (solenoid)	mS	0.125
DIGITAL OUTPUTS		V	Logical 0 = <2
		V	Logical 1 = >12 (50 mA)
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Input Resistance	ohm	25k
SOLENOID OUTPUTS	Nominal PWM output	mA	500 – 2600; broken wire monitored and short circuit proof
	PWM frequency	Hz	61 – 2604; adjustable in steps

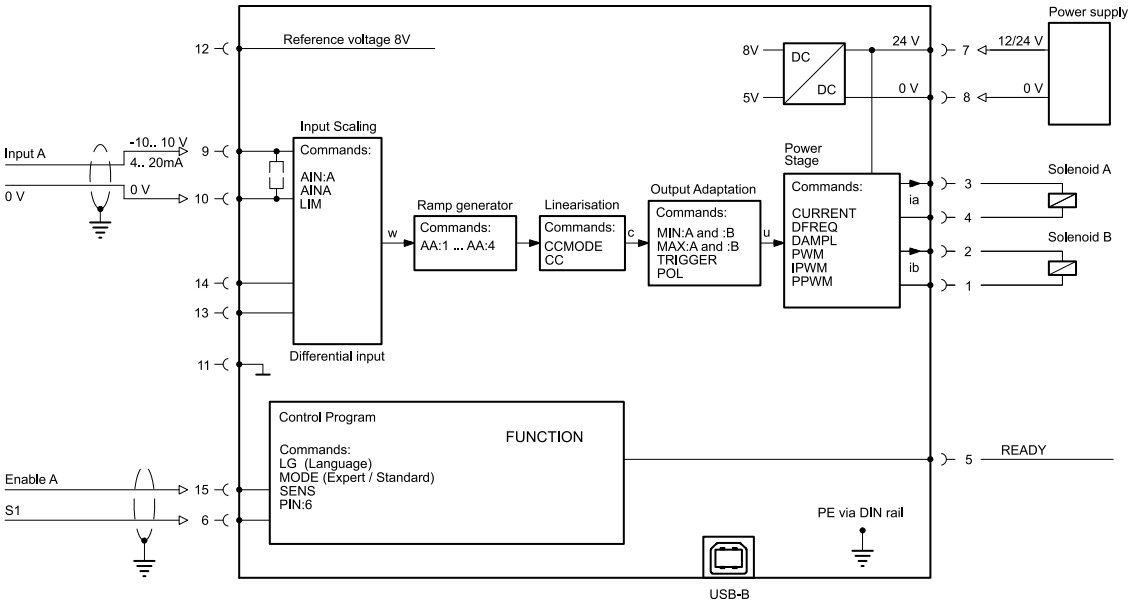
ELECTRICAL CONNECTION	Power and Signal		USB type B
	Communication		4 x 4 pol. screw terminals
	Ground		PE: direct via DIN rail
HOUSING	Housing		Snap On Module EN 50022
	Material		Polyamide PA 6.6
	Combustibility Class	UL94	V0
INTERFACE			USB type B
			Virtual COM port driver (CHI-PC)
			9600 to 57600 Baud (Default = 57600)
			1 Stop bit, No parity, No handshake
WEIGHT		kg	0.19
PROTECTION CLASS			IP20
TEMPERATURE RANGE		°C	-20 to 60
HUMIDITY		%	<95 (not condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2: 8/2005
	Immunity		EN 61000-6-4: 6/2007; A1:2011
	Vibration Resistance		IEC 60068-2-6 (category C)

IDENTIFICATION CODE

CEM - AA - B

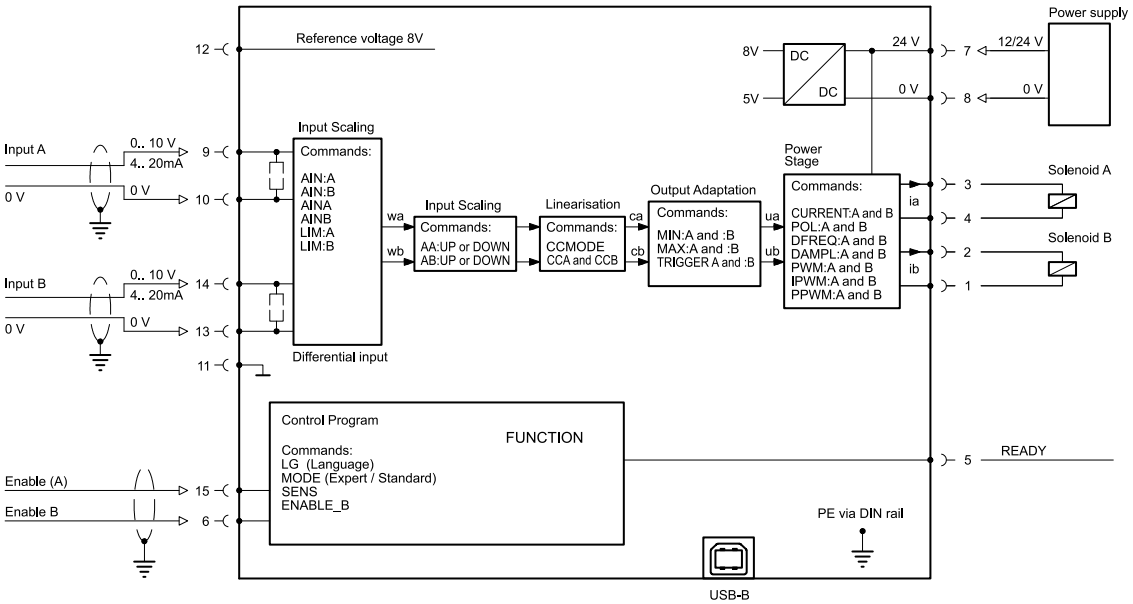
Dual Channel Power Amplifier

FUNCTIONAL DIAGRAM: FUNCTION AA



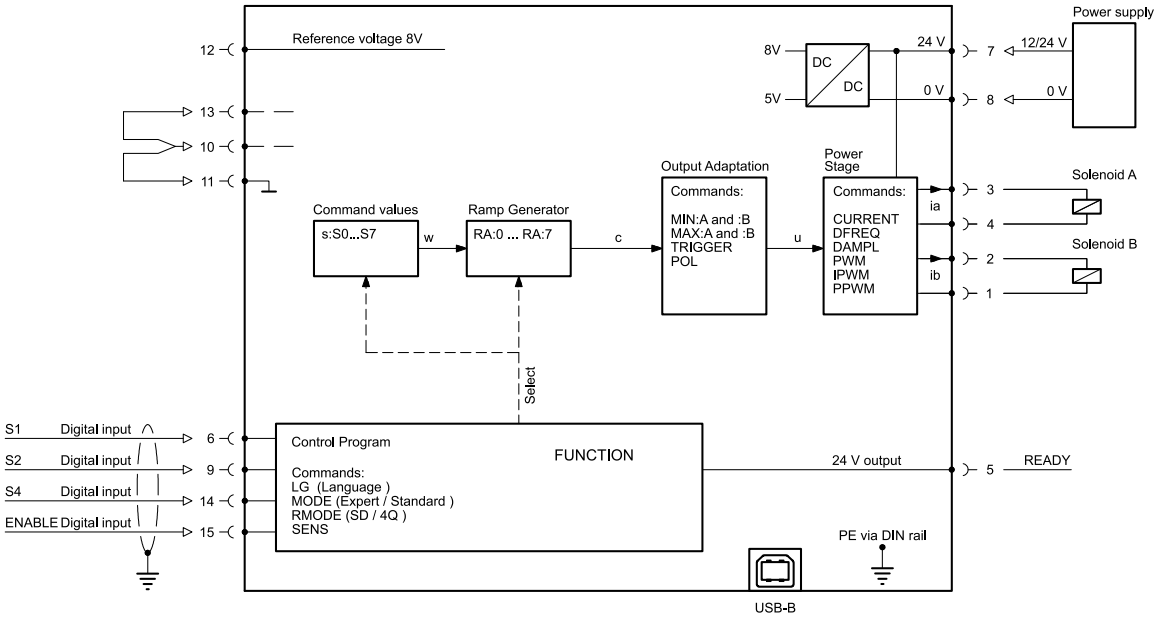
In the AA function mode (Standard Default) this module accepts a wide variety of analog input signals to control either a single or dual solenoid proportional valve. The input and outputs are easily configured with the CHI-PC configuration software via a standard USB to USB type B communication cable.

FUNCTIONAL DIAGRAM: FUNCTION A-B



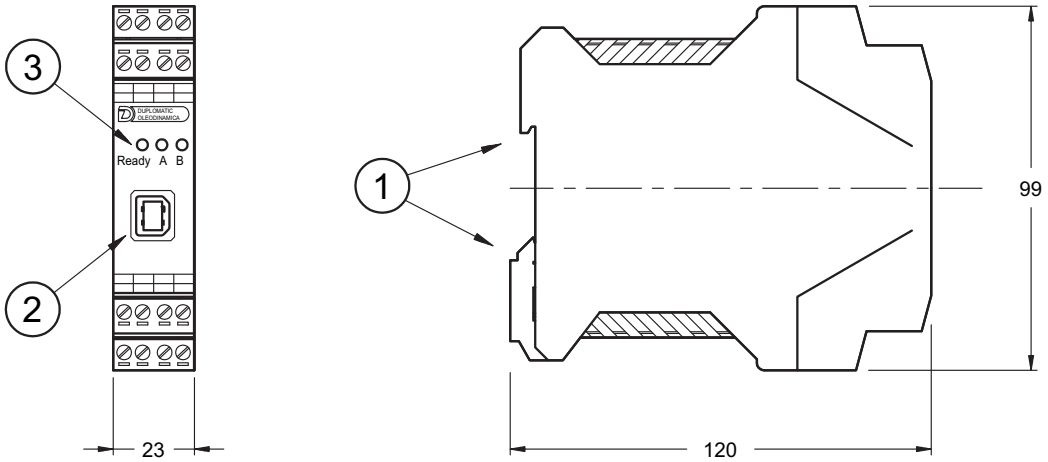
In the A-B function mode, this module accepts a wide variety of analog input signals to control two separate single solenoid proportional valves by separate input command signal that are independent from each other. The input and outputs are easily configured with the CHI-PC configuration software via a standard USB to USB type B communication cable.

FUNCTIONAL DIAGRAM: FUNCTION RA

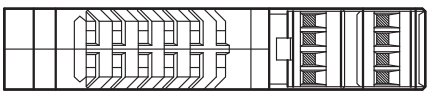


In the RA function mode, this module accepts 3 independent switch inputs to control either a single or dual solenoid proportional valve. Each input has independent adjustable speed and ramp controls. Inputs are additive for up to 8 unique preset speed and ramp profiles. The input and outputs are easily configured with the CHI-PC configuration software via a standard USB to USB type B communication cable.

DIMENSIONS



1	DIN EN 50022 rail type fastening
2	USB interface, for setup
3	LEDs for output signals



CLOSED LOOP PRESSURE AMPLIFIER
CEM-PA

DESCRIPTION

This closed loop PID amplifier, drives a single solenoid proportional pressure or flow control valve coil up to 2.6A. It is suitable to provide precise closed loop control in pressure, force, or velocity systems. This module uses traditional PID error correction to provide stable control in dynamic systems.

A wide range of analog signals are accepted. User may select either voltage or current input mode. These inputs are easily scaled to match system requirements. Input command can be ramped. PID variables are adjustable over a wide range. Easily switched from open loop to closed loop control.

Min and Max output current are adjustable. Output characteristics can be independently customized. The module is disabled if the coil outputs are shorted or open. If command current signal is outside of the proper range, the module is disabled. PWM and Dither are user adjustable.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use CHI-PC software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	mA	60 + solenoid current
	External Fuse	A	3 (medium action)
REFERENCE		V	8 (maximum 25 mA)
ANALOG INPUTS	Voltage	V	± 10 / 0 to 10
	Impedance	ohm	150k
	Current	mA	4 – 20
	Impedance	ohm	390
	Resolution	%	<0.006 incl. oversampling
	Sample Time (pressure)	mS	1.0
	Sample Time (solenoid)	mS	0.125
DIGITAL OUTPUTS		V	Logical 0 = <2
		V	Logical 1 = >12 (50 mA)
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Input Resistance	ohm	25k
SOLENOID OUTPUTS	Nominal PWM output	mA	500 – 2600; broken wire monitored and short circuit proof
	PWM frequency	Hz	61 – 2604; adjustable in steps

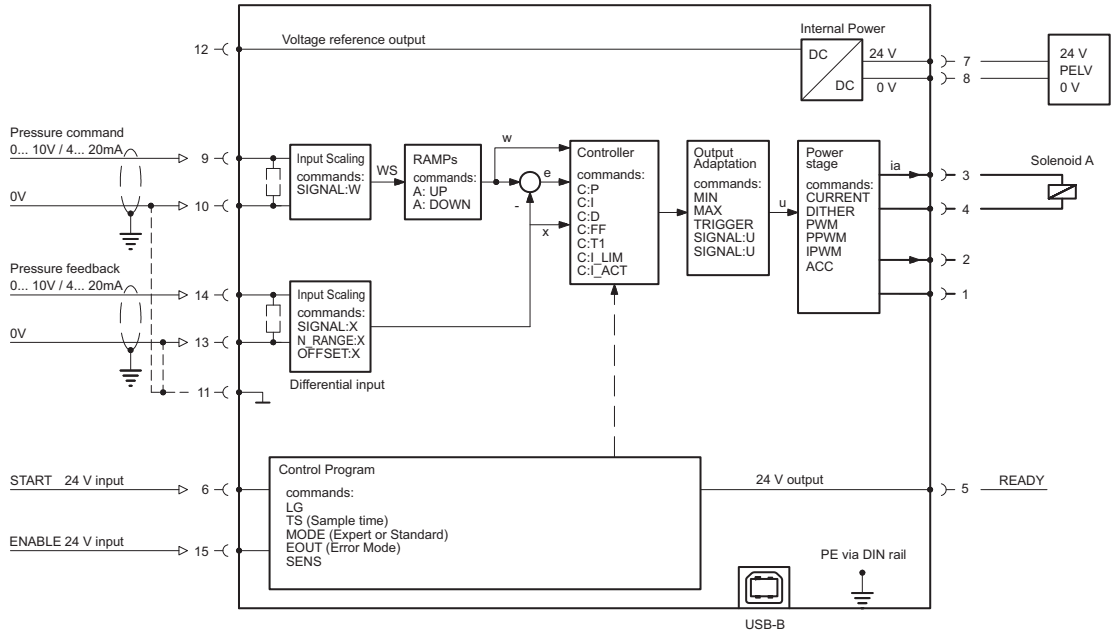
ELECTRICAL CONNECTION	Power and Signal		USB type B
	Communication		4 x 4 pol. screw terminals
	Ground		PE: direct via DIN rail
HOUSING	Housing		Snap On Module EN 50022
	Material		Polyamide PA 6.6
	Combustibility Class	UL94	V0
INTERFACE			USB type B
			Virtual COM port driver (CHI-PC)
			9600 to 57600 Baud (Default = 57600)
			1 Stop bit, No parity, No handshake
WEIGHT		kg	0.19
PROTECTION CLASS			IP20
TEMPERATURE RANGE		°C	-20 to 60
HUMIDITY		%	<95 (not condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2: 8/2005
	Immunity		EN 61000-6-4: 6/2007; A1:2011
	Vibration Resistance		IEC 60068-2-6 (category C)

IDENTIFICATION CODE

CEM - PA - B

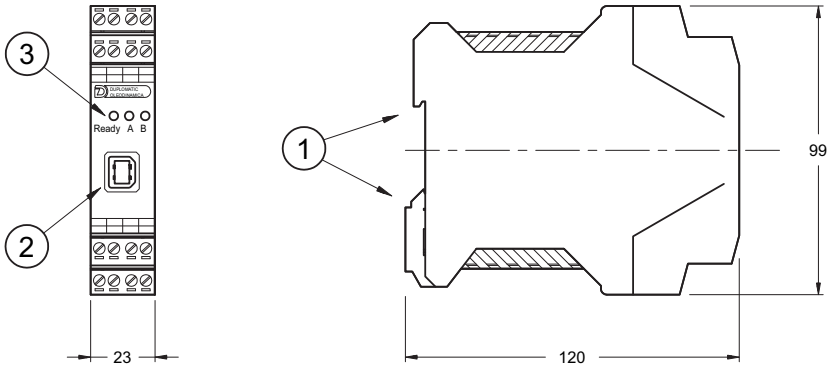
Closed Loop Pressure Amplifier

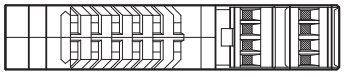
FUNCTIONAL DIAGRAM



This Closed Loop module has been developed for controlling pressure and force (and optionally speed, too) in hydraulic systems. The controller structure is optimized for pressure closed-loop control systems with typical pressure valves (pressure reducing or pressure relieve valves). An integrated power stage and high dynamic control loops (1 ms for pressure control and 0.125 ms for the current loop control) offer a simple and powerful solution.
The control loop is designed as bypass control function, where the input signal is linked via a control parameter directly to the control output (valve) and the PID compensator has to control the linearity deviation only.
The input and outputs are easily scaled and configured with the CHI-PC configuration software via a standard USB to USB type B communication cable.

DIMENSIONS





1	DIN EN 50022 rail type fastening
2	USB interface, for setup
3	LEDs for output signals

CLOSED LOOP POSITION MODULE
CEM-SA

DESCRIPTION

This closed loop position module has been developed for controlling hydraulic positioning drives. Proportional valves with integrated or external electronics can be controlled with the different output. Output is an analog signal of either voltage, 0 to ± 10V or current, 4-20mA, suitable for directly driving a proportional directional valve with on board electronics.

The internal profile generation is optimized for stoke-dependent deceleration or the NC control mode. The controller and the controller settings are factory preset to typical requirements and can be optimized for the control behavior as required. The optimized control function offers a high degree of precision together with high stability for hidraulic drives. The movement cycle is controlled via the external position and speed inputs.

The high resolution of the analog signals ensures good positioning behavior. A wide range of analog signals are accepted. User may select either voltage or current input mode. These inputs are easily scaled to match system requirements. Forward and Reverse "jog" inputs allow for manual load control. A user definable window for "in position" triggers an output for communication to the next machine function.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use CHI-PC software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	W	< 100
	External Fuse	A	1 (medium action)
REFERENCE		V	8 (maximum 25 mA)
ANALOG INPUTS	Voltage	V	0 – 10
	Impedance	ohm	25k
	Current	mA	4 – 20
	Impedance	ohm	240
	Resolution	%	0.003 incl. oversampling (max res. 1 µm)
	Sample Time (process)	mS	1.0
	Sample Time (solenoid)	mS	0.125
DIGITAL OUTPUTS		V	Logical 0 = <2
		V	Logical 1 = >12 (50 mA)
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Input Resistance	ohm	25k
ANALOG OUTPUTS	Voltage	V	2 x 0 – 10 differential output
	Current	mA	4 – 20; 390 Ω max load
	Resolution	%	0.006

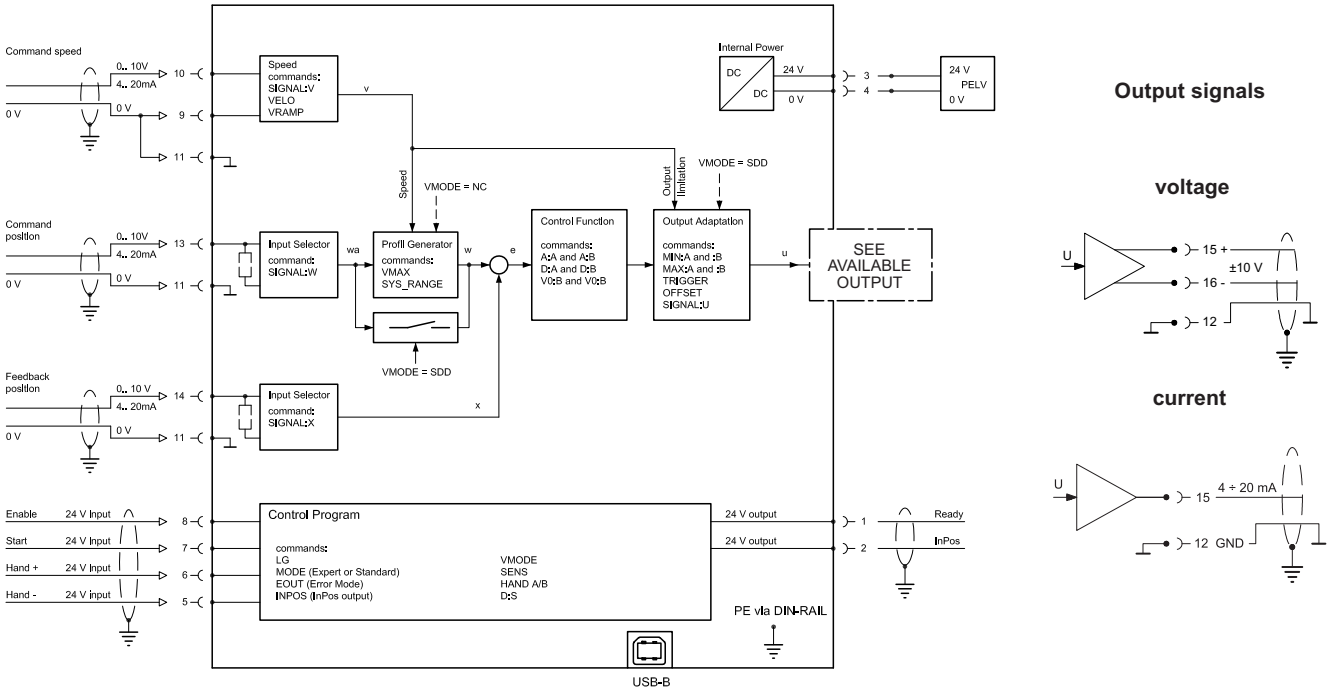
ELECTRICAL CONNECTION	Power and Signal		USB type B
	Communication		4 x 4 pol. screw terminals
	Ground		PE: direct via DIN rail
HOUSING	Housing		Snap On Module EN 50022
	Material		Polyamide PA 6.6
	Combustibility Class	UL94	V0
INTERFACE			USB in RS 232C Emulation
			9600 to 57600 Baud (Default = 57600)
			1 Stop bit, No parity, echo mode
WEIGHT		kg	0.17
PROTECTION CLASS			IP20
TEMPERATURE RANGE		°C	-20 to 60
HUMIDITY		%	<95 (not condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2: 8/2005
	Immunity		EN 61000-6-4: 6/2007; A1:2011
	Vibration Resistance		IEC 60068-2-6 (category C)

IDENTIFICATION CODE

CEM - SA - B

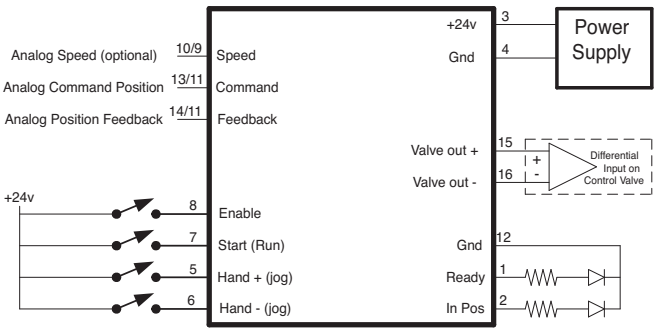
Closed Loop Position Module

FUNCTIONAL DIAGRAM

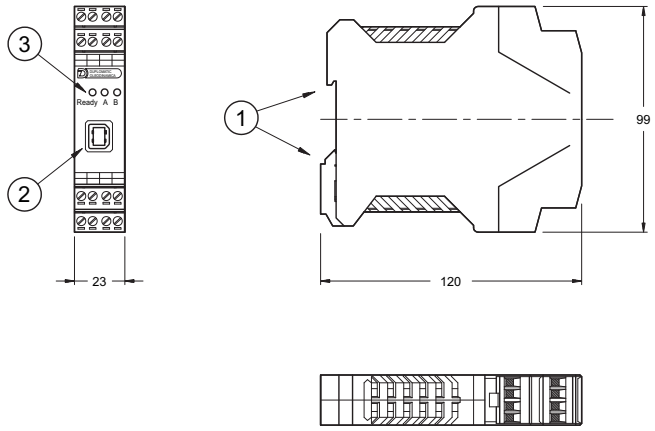


This Closed Loop module accepts a wide variety of analog input signals. Stroke Dependant Deceleration (SDD Mode) or Numerically Controlled (NC Mode) control functions offer a high degree of precision together with high stability for hydraulic drives. The high accurate positioning or the drift compensation can be used in case of external influence which is limiting the positioning accuracy when the axis is nearby the target position.
The input and outputs are easily scaled and configured with the CHI-PC configuration software via a standard USB to USB type B communication cable.

WIRING EXAMPLE



DIMENSIONS



1	DIN EN 50022 rail type fastening
2	USB interface, for setup
3	LEDs for output signals

CLOSED LOOP POSITION MODULE
CEM-SD

Analog Command and SSI Digital Feedback

DESCRIPTION

This closed loop position module is designed to quickly and accurately move hydraulic cylinder loads. Position and velocity commands are from analog sources. Cylinder position feedback is from a digital (SSI) source.

Stroke dependent deceleration is used to provide quick and repeatable positioning. Internal ramp and velocity adjustments allow for easy system tuning.

A wide range of analog signals are accepted. User may select either voltage or current input mode. These inputs are easily scaled to match system requirements.

Forward and Reverse "jog" inputs allow for manual load control. A user definable window for "in position" triggers an output for communication to the next machine function.

Output is an analog voltage, 0 to +10vdc, suitable for directly driving a proportional directional valve with on board electronics.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	mA	<100mA
	External Fuse	A	3 (medium action)
ANALOG INPUTS	Voltage	vDC	0 – 10
	Impedance	ohm	33k
	Current	mA	4 – 20
	Impedance	ohm	250
	Resolution	%	0.01
	Sample Time	mS	1.0
	(Speed Input) Voltage	vDC	0 – 10
	(Speed Input) Impedance	ohm	90K
SSI FEEDBACK			RS-422 150k baud
	Monitor	vDC	0 to 10
		mA	5 (max)
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Impedance	ohm	25k

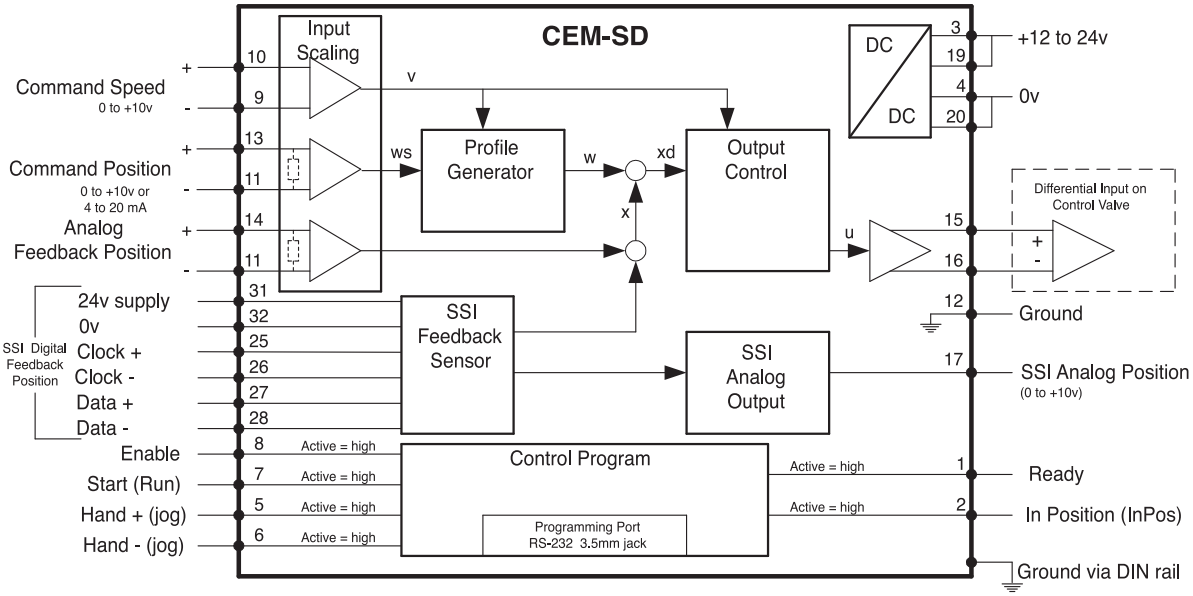
ELECTRICAL CONNECTION	Programming Port		RS-232 3.5mm Stero Jack
	Power and Signal		8 strips with 4 screw terminals each
	Ground		via DIN Rail
DIGITAL OUTPUTS		V	Logical 0 = <2 (50mA max)
		V	Logical 1 = ~ Power Supply
ANALOG OUTPUTS	Voltage	vDC	0 to ± 10
	Current	mA	5 max
	Resolution	%	0.024
HOUSING	Module		Snaps to 35mm DIN rail EN 50022
	Material		Polyamide PA 6.6
	Combustability Class	UL94	V0
	Protection Class	IP	20
	Working Temperature	°C	-20 to +60
	Storage Temperature	°C	-20 to +70
	Humidity	%	95 (non condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2
	Immunity		EN 61000-6-3
	Vibration Resistance		EIC 60068-2-6

IDENTIFICATION CODE

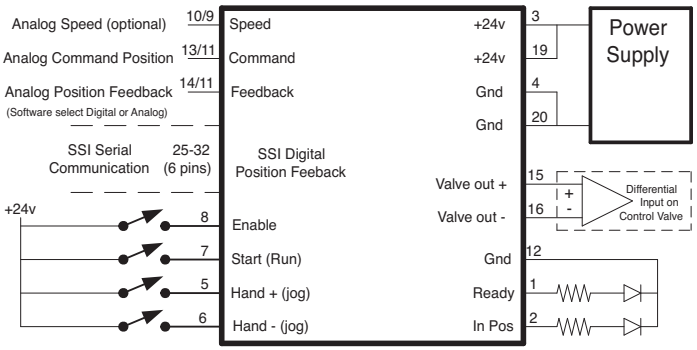
CEM - SD - A

SD — Closed Loop Position Module

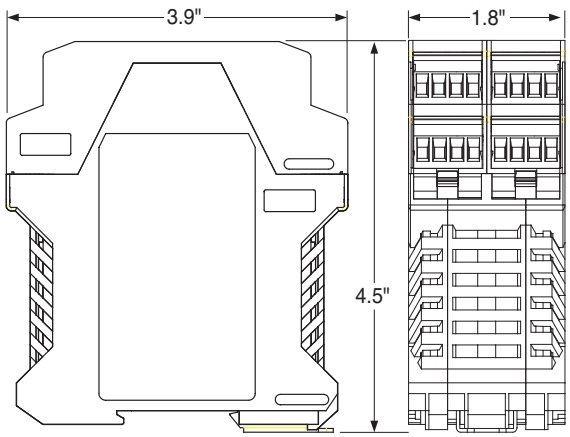
FUNCTIONAL DIAGRAM



WIRING EXAMPLE



DIMENSIONS



CLOSED LOOP SYNCHRONIZATION MODULE
CEM-MS

Two Axis Control

DESCRIPTION

This closed loop position module is to be applied in pairs, each module driving a hydraulic cylinder for a system of synchronized motion. This pair of cylinders can quickly and accurately move hydraulic cylinder loads in unison. Position and velocity commands are from analog sources. Cylinder feedback is from an analog source.

Stroke dependent deceleration is used to provide quick and repeatable positioning. Internal ramp and velocity adjustments allow for easy system tuning.

A wide range of analog signals are accepted. User may select either voltage or current input mode. These inputs are easily scaled to match system requirements.

Output is an analog voltage, 0 to +10vdc, suitable for directly driving a proportional directional valve with on board electronics.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	mA	<100mA
	External Fuse	A	3 (medium action)
ANALOG INPUTS	Voltage	vDC	0 – 10
	Impedance	ohm	33k
	Current	mA	4 – 20
	Impedance	ohm	250
	Resolution	%	0.01
	Sample Time	mS	1.0
	(Speed Input) Voltage	vDC	0 – 10
	(Speed Input) Impedance	ohm	90K
DIGITAL OUTPUTS		V	Logical 0 = <2 (50mA max)
		V	Logical 1 = ~ Power Supply
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Impedance	ohm	25k

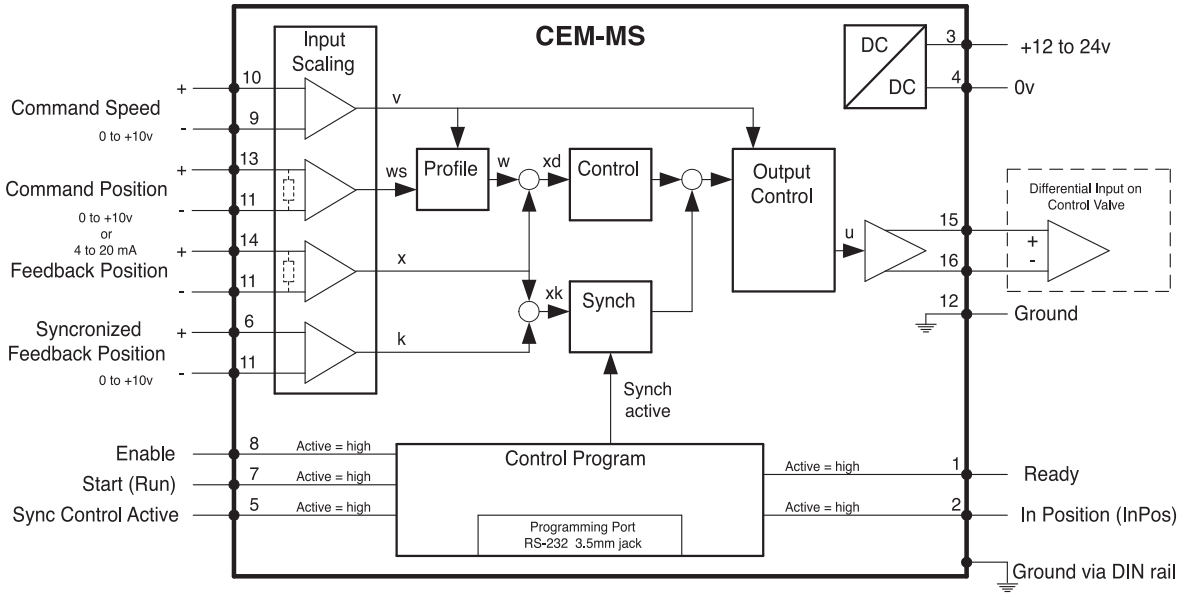
ELECTRICAL CONNECTION	Programming Port		RS-232 3.5mm Stero Jack
	Power and Signal		8 strips with 4 screw terminals each
	Ground		via DIN Rail
ANALOG OUTPUTS	Voltage	vDC	0 to ± 10
	Current	mA	5 max
	Resolution	%	0.024
HOUSING	Module		Snaps to 35mm DIN rail EN 50022
	Material		Polyamide PA 6.6
	Combustability Class	UL94	V0
	Protection Class	IP	20
	Working Temperature	°C	-20 to +60
	Storage Temperature	°C	-20 to +70
	Humidity	%	95 (non condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2
	Immunity		EN 61000-6-3
	Vibration Resistance		EIC 60068-2-6

IDENTIFICATION CODE

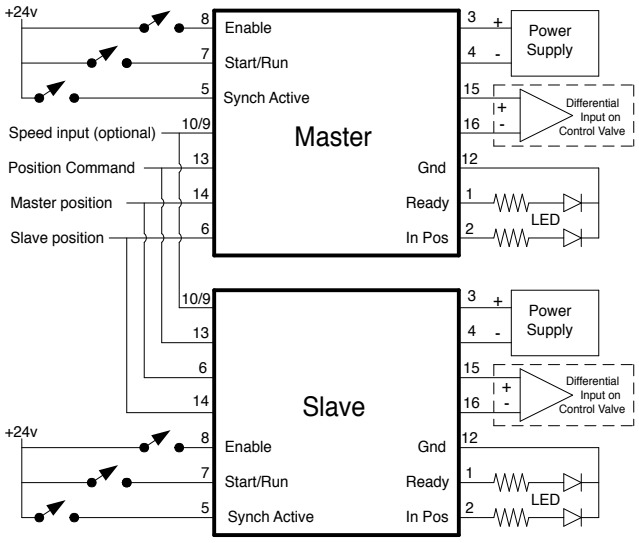
CEM - MS - A

Closed Loop Synchronization Module

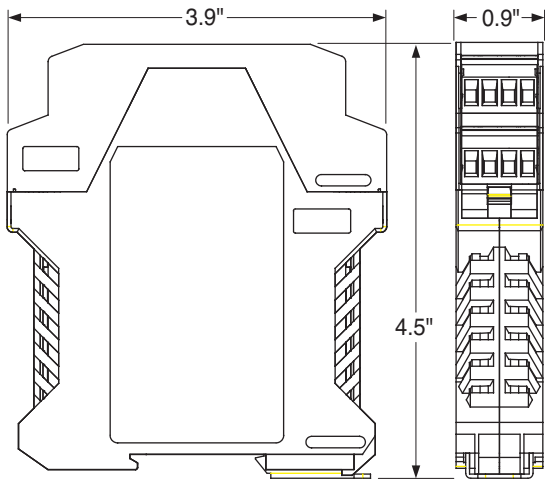
FUNCTIONAL DIAGRAM



WIRING EXAMPLE



DIMENSIONS



CLOSED LOOP BY-PASS SYNCHRONIZATION
CEM-BPS

DESCRIPTION

This closed loop position module has been developed for controlling hydraulic synchronization systems. The typical synchronization accuracy is about 0.1% to 1% of the sensor length (depending on the hydraulic system). Proportional valve with integrated or external electronics can be controlled with the differential output. Output is an analog signal of either voltage, 0 to +/- 10v or current 4-20mA.

This module is designed for use within a flow divider circuit. A flow divider (valve or gear pump) will synchronize the axis but with limited accuracy. A proportional valve working in parallel to the flow divider is compensating the flow error in one or both cylinders. This kind of synchronization control is ex-tremely stable and simple to use.

With the **AUTO SETUP** input feature, the offset error between both sensors can be measured and compensated automatically.
The internal profile generation is optimized for stroke-dependent deceleration control mode. The controller and the controller settings can be optimized for the control behavior as required.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use CHI-PC software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	W	< 100
	External Fuse	A	1 (medium action)
REFERENCE		V	8 (maximum 25 mA)
ANALOG INPUTS	Voltage	V	0 – 10
	Impedance	ohm	25k
	Current	mA	4 – 20
	Impedance	ohm	240
	Resolution	%	0.003 incl. oversampling (max res. 1 µm)
	Sample Time (process)	mS	1.0
	Sample Time (solenoid)	mS	0.125
DIGITAL OUTPUTS		V	Logical 0 = <2
		V	Logical 1 = >12 (50 mA)
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Input Resistance	ohm	25k
ANALOG OUTPUTS	Voltage	V	2 x 0 – 10 differential output
	Current	mA	4 – 20; 390 Ω max load
	Resolution	%	0.006

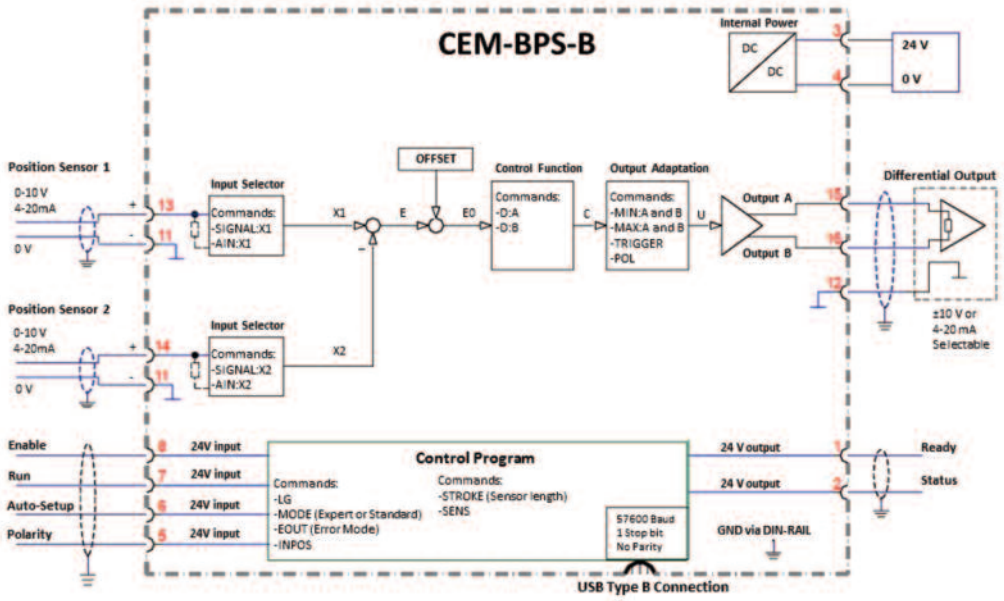
ELECTRICAL CONNECTION	Power and Signal		USB type B
	Communication		4 x 4 pol. screw terminals
	Ground		PE: direct via DIN rail
HOUSING	Housing		Snap On Module EN 50022
	Material		Polyamide PA 6.6
	Combustibility Class	UL94	V0
INTERFACE			USB in RS 232C Emulation
			9600 to 57600 Baud (Default = 57600)
			1 Stop bit, No parity, echo mode
WEIGHT		kg	0.17
PROTECTION CLASS			IP20
TEMPERATURE RANGE		°C	-20 to 60
HUMIDITY		%	<95 (not condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2: 8/2005
	Immunity		EN 61000-6-4: 6/2007; A1:2011
	Vibration Resistance		IEC 60068-2-6 (category C)

IDENTIFICATION CODE

CEM - BPS - B

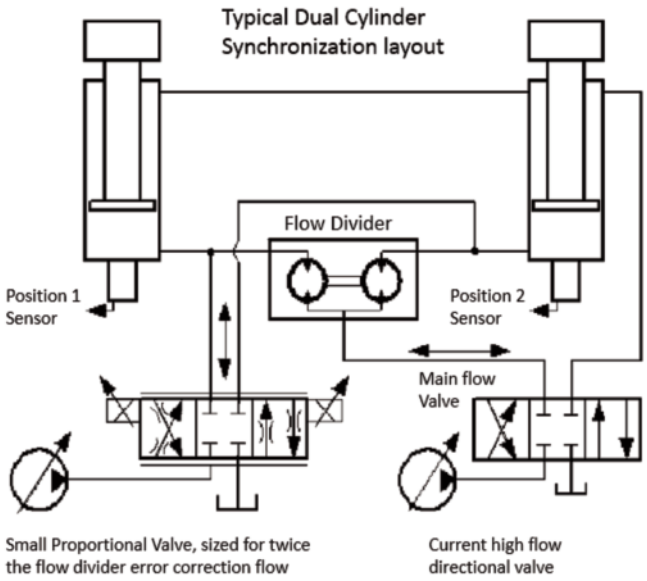
By-Pass Synchronization

FUNCTIONAL DIAGRAM



This closed loop synchronization module is designed for use with flow divider circuits, where a proportional valve is used to correct for the output flow errors of the typical flow divider. With the proportional valve working in parallel with the flow divider, feedback signals from the actuator will allow the valve to make corrections while the cylinders are in motion keeping tight synchronization accuracy.

TYPICAL SCHEMATIC



CLOSED LOOP PID MODULE
CEM-PID

Universal PID Signal Conditioner

DESCRIPTION

This closed loop PID module compares command and feedback signals, and applies traditional PID gain settings to the error signal. This modified signal is provided as an analog voltage (0 to +/-10v) output. It may be used to drive proportional pressure or flow control valves with on board electronics, or as a command to another amplifier module. It is suitable to provide dynamic closed loop control in pressure, force, or velocity systems.

A wide range of analog signals are accepted. User may select either voltage or current input mode. These inputs are easily scaled to match system requirements. Input command can be ramped. PID variables are adjustable over a wide range. Easily switched from open loop to closed loop control.

Output can be scaled to match the proportional valve being driven. If command current signal is outside of the proper range, the module is disabled. Digital outputs inform the user of system errors.

This module is easily adapted to a variety of system requirements. All variables are user adjusted with easy to use software on your Microsoft Windows laptop. Control variables are stored in non-volatile memory internal to the module. All variables can be read by the laptop, and reproduced exactly on other modules.

TECHNICAL DATA

POWER SUPPLY		vDC	12 to 30 (including ripple)
	Consumption	mA	<100mA
	External Fuse	A	3 (medium action)
ANALOG INPUTS	Voltage	vDC	0 – 10
	Impedance	ohm	33k
	Current	mA	4 – 20
	Impedance	ohm	250
	Resolution	%	0.012
	Sample Time	mS	1.0
	Reference Voltage	vDC	8 (maximum 10 mA)
DIGITAL INPUTS		V	Logical 0 = <2
		V	Logical 1 = >10
	Impedance	ohm	25k
DIGITAL OUTPUTS		V	Logical 0 = <2 (50mA max)
		V	Logical 1 = ~ Power Supply

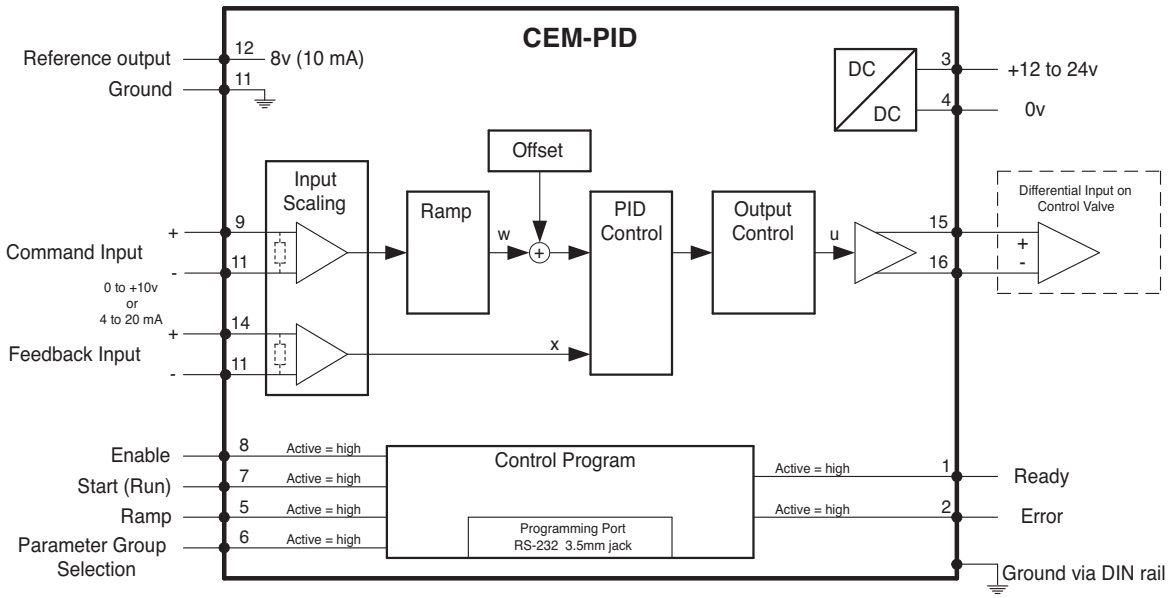
ELECTRICAL CONNECTION	Programming Port		RS-232 3.5mm Stero Jack
	Power and Signal		8 strips with 4 screw terminals each
	Ground		via DIN Rail
ANALOG OUTPUTS	Voltage	vDC	0 to ± 10
	Current	mA	5 max
	Resolution	%	0.024
HOUSING	Module		Snaps to 35mm DIN rail EN 50022
	Material		Polyamide PA 6.6
	Combustability Class	UL94	V0
	Protection Class	IP	20
	Working Temperature	°C	-20 to +60
	Storage Temperature	°C	-20 to +70
	Humidity	%	95 (non condensing)
ELETCRO MAGNETIC COMPATIBILITY	Emission		EN 61000-6-2
	Immunity		EN 61000-6-3
	Vibration Resistance		EIC 60068-2-6

IDENTIFICATION CODE

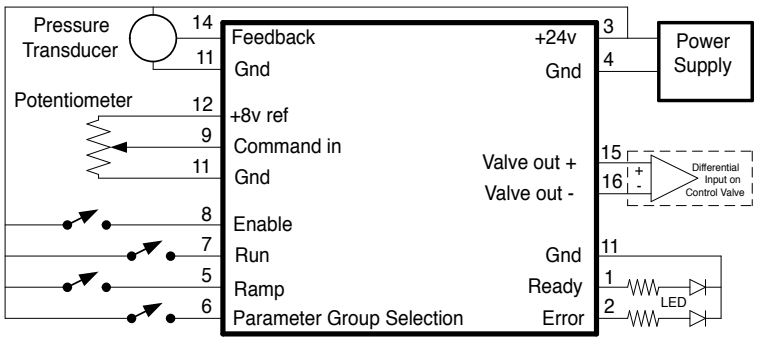
CEM - PID - A

Closed Loop PID Module

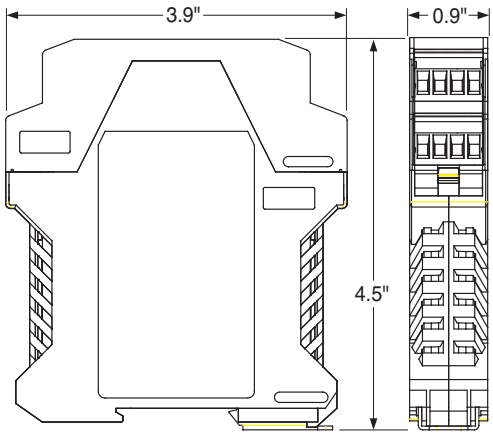
FUNCTIONAL DIAGRAM



WIRING EXAMPLE



DIMENSIONS



VALVE ELECTRICAL ACCESSORIES
FOR ELECTRO-HYDRAULIC PRODUCTS

DESCRIPTION

These products are used to connect, configure and troubleshoot your electro hydraulic proportional products.

CHI electro hydraulic products are unique in the industry, as you need only "One cable, and One software" to configure our full line of all digital valves and control modules.

This easy to use software allows you precise and repeatable control of the electronic variables necessary to tune the motion profile of your control system.

All variables can be adjusted, saved and reproduced into other modules. Variable names and ranges are consistent from one module to another, making your machine tuning job easier.

Product offerings include:

- Programming Cable
- Adapters
- Software
- Programming Boxes
- Connectors and Cordsets

PROGRAMMING CABLES

VEA-BUSB (USB to Type B USB) cable is necessary to configure all CEM "**B series**" Modules.

VEA-USB (USB to RS232 3.5 mm with Communication Chip) cable is necessary to configure all Digital Valves with On-Board Electronics along with the Programming Box and all "**A series**" CEM Modules.

VEA-BUSB

PROGRAMMING BOX

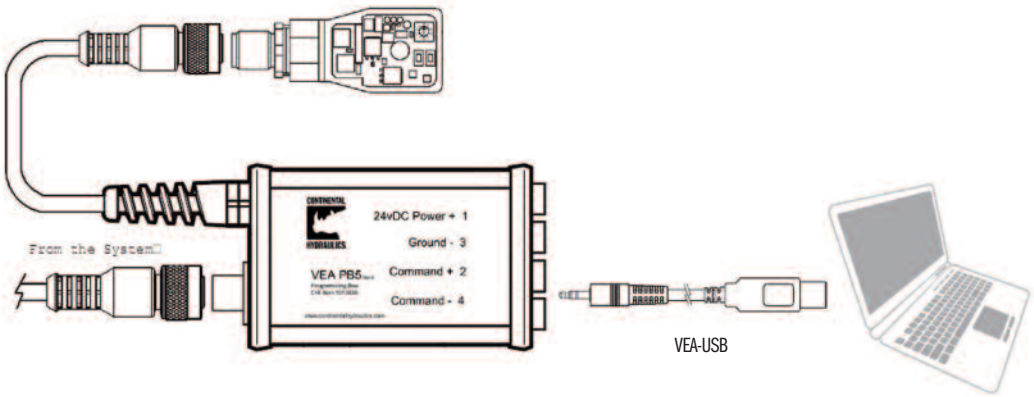
VEA-USB series Communication Cable is required with all Programming Boxes

VEA-PB5 is a tool that eases the task of making adjustments to digital electronic controllers. This programming box can be used during the commissioning of a new product, or when troubleshooting an existing application.

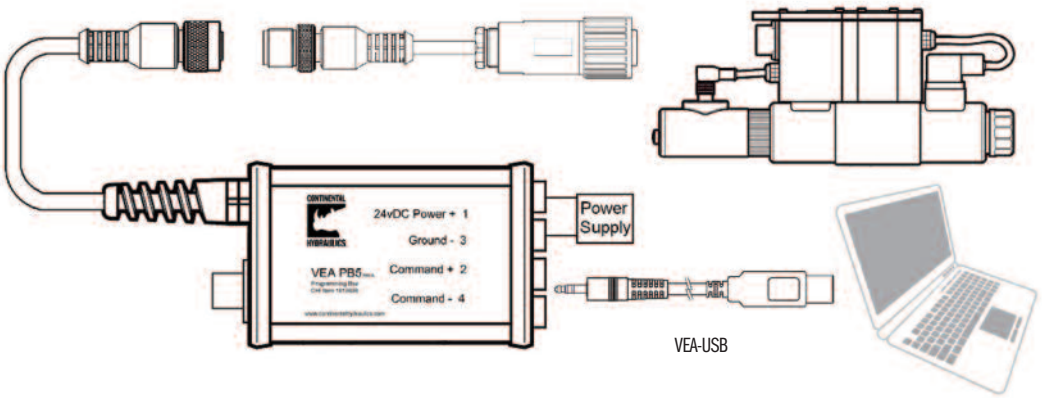
To troubleshoot an existing application, simply disconnect the existing 5 pin connector, and insert this tool in series. You may now monitor the on board amplifier as being commanded by the machine controller. The VEA-PB5 allows you to connect your Microsoft Windows laptop via the VEA-USB programming cable. You may then tune the variables to optimize you motion profile, and save those changes. Banana Jacks for power and signal are included, and allow for bench top programming.

VEA-PB5 will connect directly to CEM-AC coil mounted amplifiers. VEA-527 is required to connect to "J" and "G" pressure and flow valves with 7 pin connector on board electronics.

CONFIGURING A CEM-AC



CONFIGURING A VALVE WITH ON BOARD ELECTRONICS ON THE BENCH



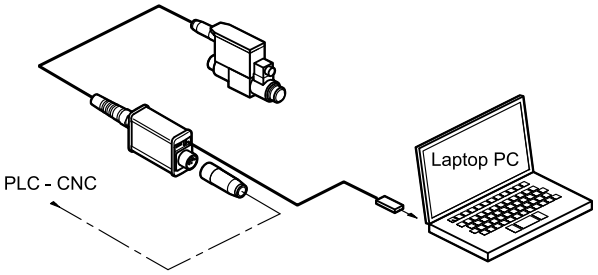
PROGRAMMING BOX

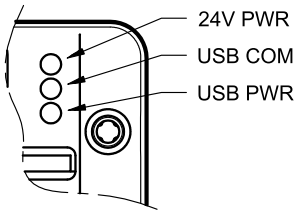
VEA-PB7 is a tool that eases the task of making adjustments to digital electronic controllers. This programming box can be used during the commissioning of a new product, or when troubleshooting an existing application.

To troubleshoot an existing application, simply disconnect the existing 7 pin connector, and insert this tool in series. You may now monitor the on board amplifier as being commanded by the machine controller. The VEA-PB7 allows you to connect your Microsoft Windows laptop via VEA-USB, and change variables as required.

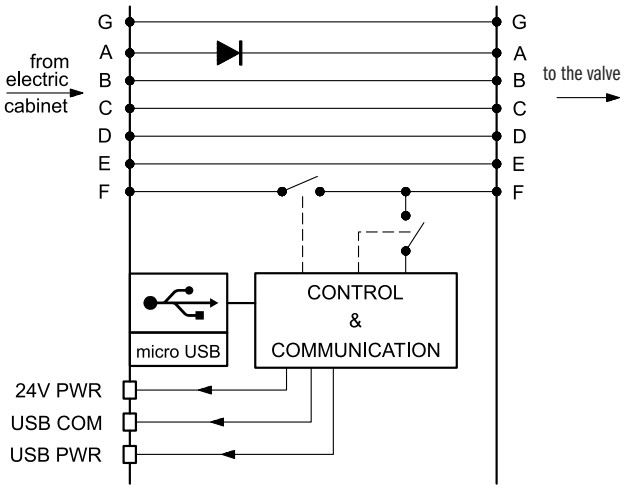
VEA-PB7 will connect directly to any valves with 7 pin connector on board electronics.

CONFIGURING A VALVE WITH ON BOARD ELECTRONICS





BLOCK DIAGRAM

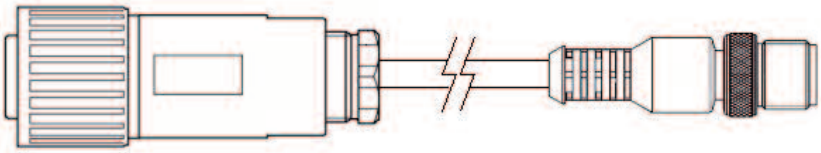


FUNCTION	DESCRIPTION
24V PWR (24V powered)	Main power supply via 24V (pin A) green LED indicates the device is powered by 24 V source on pin A of the 7-pin connector.
USB COM	USB communication red = [TX] transmission green = [RX] receiving
USB PWR (USB powered)	USB supply yellow indicates that the USB section is powered.

WARNING! Connecting the device will cut off the pin F monitor signal from the valve, in order to allow the LINbus communication. This behaviour can be managed via software.

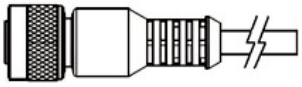
PROGRAMMING BOX CABLE ADAPTER

VEA-527 is an adapter that allows the VEA-PB5 to connect to proportional valves with on board electronics. It has a male M12 5 pin jack, and a female 7 pin plug to connect to the valve. Internally, Pin A is connected to Pin C to turn on "Enable". Power, signal and communication pins are wired straight through.

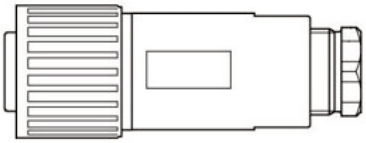


VALVE CONNECTORS AND CORDSETS

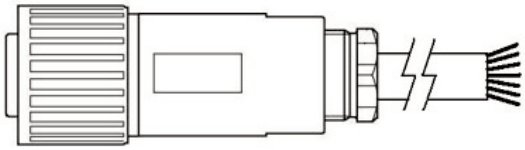
VEA-3P5C is a molded shielded cordset that brings power and signal to the CEM AC amplifier. It is a M12 female connector attached 5 conductors of 24ga finely stranded copper, all wrapped in a foil shield. The shield drain is to be connected to frame ground at the control box. The cable is 5 meters long, and can be easily cut to length during installation.



Electrical connectors and shielded cable assemblies connects the machine controller to the 7 pin on board electronics valve controller. Plastic **VEA-3P7P** and metal **VEA-3P7M** versions are offered.

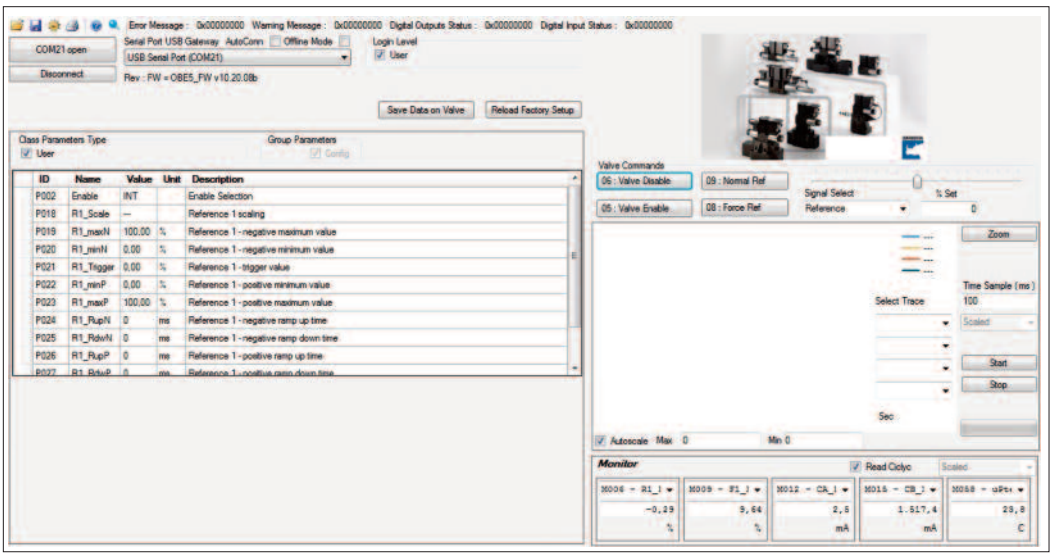


VEA-3P7C cordset attaches a plastic connector body to a 3 meter long cable made of 7 individual 18 gauge copper conductors, all wrapped in a foil shield. The outer jacket is an oil resistant gray PVC. The controller end of the cable is stripped and tagged with pin names.



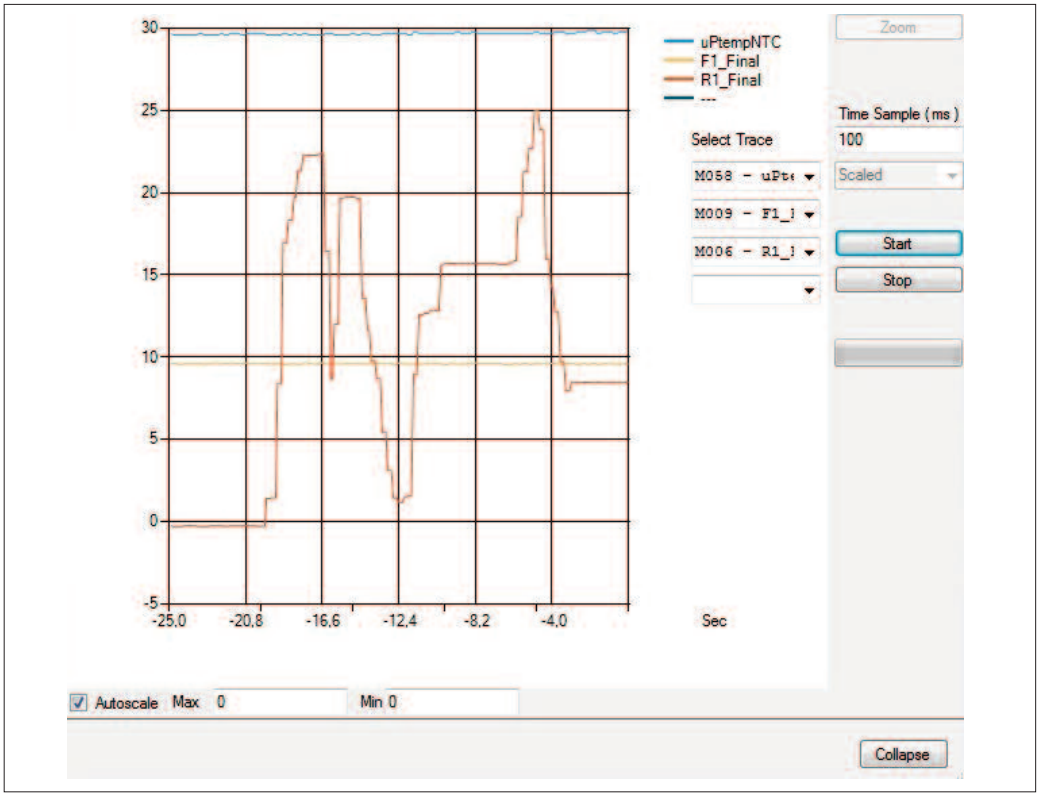
SOFTWARE

CHI PC is a “free to download” application for your Microsoft Windows® laptop. This tool allows you configure and troubleshoot all of your CHI digital electronics products. This easy to understand software can be used in all three process steps: configure and tune the machine, storing these variables to permanent memory, and monitoring the machine during operation.



The configuration page allows the user to scale inputs, adjust ramp times, set closed loop control variables, and adjust outputs to match the valve. Only those parameters that apply to the connected module appear on this screen

The oscilloscope feature allows the user to monitor inputs and outputs in real time. Cursor control allows for precise measurement of variables.



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